

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please ADD new claim 15 in accordance with the following:

1. (Original) A method of surface-mounting semiconductor chips on a PCB, including mounting a flip chip type semiconductor chip on the PCB mounted with electronic components, comprising:

forming a solder bump on a conductive contact area of each semiconductor chip on a back of a semiconductor wafer mounted with a plurality of semiconductor chips;

injecting underfill material on the area of the semiconductor wafer formed with the solder bump;

hardening the underfill material partially to have a cohesive property;

severing the semiconductor wafer into the plurality of the semiconductor chips;

arranging the severed semiconductor chips having the hardened underfill material on the PCB; and

heating the PCB at a predetermined temperature.

2. (Original) The surface-mounting method of the semiconductor chip on the PCB according to claim 1, wherein the predetermined heating temperature is above the temperature of a melting point of the solder bump.

3. (Original) The surface-mounting method of the semiconductor chip on the PCB according to claim 2, wherein the underfill material is solidified during the heating.

4. (Previously Presented) A process of preparing a wafer to be used for surface mounting a semiconductor chip on a PCB comprising:

forming a plurality of solder balls on a surface of a semiconductor wafer;

coating the surface of the semiconductor wafer formed with the solder balls with underfill material;

curing the underfill material to achieve a semisolid state,

wherein a temperature to cure the underfill material to a semisolid state is lower than a reflow temperature of the solder balls.

5. (Cancelled)

6. (Previously Presented) The process of preparing a wafer to be used for surface mounting a semiconductor chip on a PCB as in claim 4, further comprising:

severing the semiconductor wafer into a plurality of semiconductor chips;
arranging the plurality of semiconductor chips on the PCB; and
raising the temperature of the PCB to a predetermined temperature.

7. (Original) The process of preparing a wafer to be used for surface mounting a semiconductor chip on a PCB as in claim 6, wherein the predetermined temperature is above the reflow temperature of the solder balls.

8. (Original) The process of preparing a wafer to be used for surface mounting a semiconductor chip on a PCB as in claim 7, wherein the underfill is cured to a solid state at the predetermined temperature.

9. (Original) The process of preparing a wafer to be used for surface mounting a semiconductor chip on a PCB as in claim 4, wherein the height of the underfill coating is approximately equal to the height of the solder balls.

10. (Original) The process of preparing a wafer to be used for surface mounting a semiconductor chip on a PCB as in claim 4, wherein the height of the underfill coating is above the height of the solder balls.

11. (Original) A process of surface mounting flip chip type semiconductor chips on a PCB comprising:

forming a plurality of solder bumps on a surface of a flip chip type semiconductor wafer;
injecting the surface of the flip chip type semiconductor wafer formed with solder bumps with underfill material to a height approximately equal to the solder bumps;
curing the underfill material to achieve a semisolid state;
severing the flip chip type semiconductor wafer into a plurality of flip chip semiconductor

chips;

arranging the plurality of flip chip semiconductor chips on the PCB; and
raising the temperature of the PCB to a predetermined temperature.

12. (Original) The process as in claim 11, wherein the predetermined temperature is above a temperature that the solder bumps reflow.

13. (Original) The process as in claim 12, wherein the underfill is cured to a solid state at the predetermined temperature.

14. (Original) The process as in claim 11, further comprising operably arranging a plurality of electronic components on the PCB with at least one flip chip semiconductor chip before raising the temperature of the PCB to the predetermined temperature.

15. (New) A method, comprising:

injecting underfill material on a conductive contact area of a semiconductor wafer mounted with a plurality of semiconductor chips;
at least partially hardening the underfill material; and
severing the semiconductor wafer including the underfill material into the plurality of the semiconductor chips.